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ABSTRACT

This report presents information from a study of the Higher School Certificate (HSC) in New South Wales, Australia. The study investigated teaching strategies that led to success at the HSC. Researchers identified successful teachers, observed them teaching an HSC class, and followed up with an interview. Groups of ex-students also completed interviews. The results identified seven factors that contributed to HSC teaching success: (1) school background; (2) subject faculty; (3) teachers' personal qualities (orientation to subject, students, and work); (4) relationships with students; (5) teachers' professional development (networking, in-school professional development, development through experience, and out-of-school professional development); (6) resources and planning; and (7) teaching strategies (classroom climate, HSC focus, building understanding, note-making, writing essays and organizing information, questioning, assessment, and whole-class discussion, group work, and independent student activity). (Contains 10 references.) (SM)

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SUCCESSFUL TEACHING IN THE NSW HIGHER SCHOOL CERTIFICATE

SUMMARY OF
A RESEARCH REPORT
FOR THE
NSW DEPARTMENT OF
EDUCATION AND TRAINING

SP038416

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BACKGROUND/AIMS OF THE RESEARCH

Throughout the mid-90s public attention in NSW became increasingly drawn to the Higher School Certificate, as the media focused on a number of issues related to its operation and reporting. What actually constituted success at the HSC and the kind of teaching that could lead to such success were issues also dealt with by the media in very simplistic ways, such as providing comparisons between the 'top'schools by looking at the number of students each had in the top ten per cent in subject results. Such reporting took little or no account of a number of factors potentially responsible for such 'success' in these 'top' schools.

In late 1997, the Department of Education and Training commissioned research from the School of Teaching and Educational Studies at the University of Western Sydney Nepean into the identification of those teaching strategies which led to success at the HSC. This project began with the following broad objectives:

- to identify the relationship between teaching methods and HSC outcomes for students
- to identify the characteristics of successful teaching methodology
- to consider the implications of the study findings for improving teacher efficiency.

RESEARCH LITERATURE ON EFFECTIVE SCHOOLS, EFFECTIVE TEACHING AND EFFECTIVE TEACHERS

Research on effective schools has highlighted a number of factors as important in influencing overall student achievement levels. However, it is one thing to note the characteristics of apparently effective schools, but it is more difficult to discover how such schools came to their current state, and even more difficult to increase the effectiveness of other schools using these understandings because of concerns about the transferability of school effectiveness research.

Complementing school effectiveness literature, however, is research on effective teaching. Recent research suggests that most variance in performance between students is actually explained by differences between classes rather than schools. The suggestion is that it is teachers, not schools, that make the difference in student learning. Effectiveness within schools is not unitary, but variable from class to class and from year to year. Moreover, where public examinations have been used as outcome measures, there are typically large and substantial differences between classes and faculties within schools, and these are greater than differences between schools.

In focusing on the teachers themselves, literature differentiates categories such as 'expert', 'competent performer' and 'novice'. The expert might be characterised as often arational. Experts have an intuitive grasp of the teaching situation and seem to sense in non-analytic and non-deliberative ways the appropriate responses to be made in classrooms. They perform in ways that are qualitatively different from the novice or the competent performer.

Expert teachers report that their expertise depends, in part, on knowing their students. They know their students personally, so that in their classrooms they do not need to rely on formal mechanisms of control while teaching. Their students also know them and have certain expectations about what their teaching would be like. Expert teachers have students who expect to be well taught and to learn a great deal. Expert teachers also represent problems in qualitatively different ways from novices.

They seem to understand problems at a deeper level and to apply concepts and principles that are more relevant to the problem to be solved. They seem to have a fund of knowledge about the way students think and know how to deal with student errors.

An issue raised by a number of researchers is that teachers' professional craft knowledge is developed through experience - and that this often means that teachers, particularly 'experts', find it difficult to articulate what they do in the classroom. This tends to limit the identification and transfer of 'expert' knowledge about teaching, as does teachers' professional isolation in individual classrooms.

In terms of the influence of public exams, research has tended to conclude that the Grade 12 examination tends to freeze innovative teaching practices and that this augurs badly for improving teaching in the high schools.

RESEARCH METHODOLOGY

The methodology used in the research was to identify successful teachers, observe them teaching a HSC class, and follow up with an interview to both stimulate reflection and to compare teachers' and researchers' perceptions of what had been observed. In addition, for three teachers, groups of ex-students were interviewed.

Teachers were chosen by first identifying a number of subject departments in which students had, over a period of time, demonstrated significant (in the top 1%) success in a particular HSC course. These results were then put through a number of statistical 'filters' designed to eliminate variables other than the teacher as the cause of success. (For example, faculties/ courses were considered firstly because they exhibited superior performance when compared with other courses at the same school).

Teachers were chosen by:

- first identifying a number of subject departments in which students had, over a period of time, demonstrated significant (in the top 1%) success in a particular HSC course

- constructing a matrix of schools using a number of statistical 'filters' to remove variables other than teaching as factors in that success. Such filters included
  - comparing results internally across the school
  - external comparisons within a course, especially for courses with small numbers
  - additionally controlling for selectivity and high socio-economic status by only comparing such schools against each other, provided they already appeared on the matrix
  - observing the clustering of results in particular years.

Thus, it was performance within a school, as well as absolute performance in terms of state HSC exam results, which determined inclusion in the project, i.e. not only was superior and consistent HSC success required, but performance well above the individual school's overall standard. In this way, allowance was made for matters such as selectivity, socio-economic background etc. Subject departments in thirty two schools - eighteen metropolitan and fourteen non-metropolitan were identified according to this process. This included five schools which made the list in two courses each. Three schools, each metropolitan, had high NESB populations. Of the thirty two subject departments identified, seven were in selective high schools and twenty five in comprehensive high schools.

Due to various constraints, the reseachers were able to visit seventeen of the thirty-two schools identified and to observe and/or interview twenty five teachers. Nineteen of these teachers were observed teaching and the rest were interviewed only. A total of twelve disciplines were represented in the interviews and/or observations (Ancient History, Biology, Business Studies, English, Legal Studies, Mathematics, Modern History, Music, PDHPE, Physics, Society & Culture, and Visual Arts). These were across a number of course levels.

THE TEACHERS

Some interesting insights were soon evident about the teachers themselves as a group:

- the teachers are very experienced and have been in their present schools for a mean period of 17 years

- there were a high percentage of females (68%)
- eight (32%) were Head Teachers and seven were, or had been, Year Advisers

- no teacher had completed a higher degree.

All but three of the teachers were born in Australia and had English as their first language. Twelve teachers - almost half the sample - had experience of HSC marking with an average of five years.

RESULTS OF RESEARCH

Seven factors were identified as contributing to HSC teaching success:

- School Background
- Subject Faculty
- Personal Qualities
- Relationships With Students
- Professional Development
- Teaching - Resources and Planning
- Teaching Strategies

1. School Background

The overwhelming impression given by teachers about their schools was positive. These impressions largely clustered, with varying degrees of occurrence, around:

- students in the school, whom the teachers variously described as 'motivated', 'focused on learning', 'disciplined' and 'friendly', or just as 'good kids'
- other staff in the school, who were often regarded, for example, as being supportive or 'caring'
- school leadership, through, for example, support for the subject
- curriculum and pedagogy, particularly where a conscious whole-school approach to appropriate curriculum and pedagogy was a factor identified as contributing to student success
- community, again through support of the particular subject

2. Subject Faculty

Teachers identified the following aspects of their work in their specific faculties as important to their HSC success:

- the faculty as a team, particularly through
  - sharing programs, resources and teaching ideas
  - setting an identifiable climate for all individuals within the Faculty
  - whole-faculty programming
  - the faculty having a particular identity in the school
- faculty success in HSC breeding its own success in turn, such as through:
  - attracting further students - often very talented students - into the subject
  - the subject having gained the status of a 'dominant culture' within the school
  - 'setting up' student success in Years 7-10
- whole-faculty rapport with students as one of the positive features of their school climate, including a willingness on the part of staff to encourage students to approach other teachers for assistance.

Other faculty features identified by the teachers, with varying degrees of occurrence, as important in their students' HSC success, were that:

- the faculty was well organised there was easy access to resources
- the faculty had a general sense of enthusiasm and vitality
- faculty members loved their subject
- the faculty was very experienced
- the faculty was well prepared
- the faculty was up-to-date
- the faculty aimed to give the subject a high profile within the school
- the faculty focused on specific purposes appropriate to the particular needs of students

3. Teacher's Personal Qualities

Teachers' personal qualities emerged as an important factor in the research.

Orientation to subject

The teacher's mastery of content knowledge and their belief that this was a key factor in their success was one of the key findings of the study. Each teacher exhibited strong content knowledge in the lessons observed. "You've got to know your stuff" was probably the most common answer given in interviews and often the first in response to the relevant questions(s).

This was seen as a key factor in student confidence in the teacher, and in their own chances for success at the HSC. Along with this was the belief that a love of, or passion for, the subject was also a key to success, particularly in student motivation.

Orientation to students

Approachability was the important trait most readily identified here by the teachers themselves. The teachers on the whole identified a willingness to relax and 'be themselves' in the classroom and hence not to present a remote figure to the students.

Orientation to work

Most teachers described themselves as hard-working and committed in one way or another. Good organisation on the part of the teacher was seen as a key contributing factor to student confidence.

4. Relationships with Students

The strong positive classroom relationships observed in this study formed an important background against which the effective teaching occurred. It is of course impossible to disentangle the cause-and-effect nexus between successful teaching and cordial classroom relationships, and in the situations observed in the study, good relationships were an integral feature of the context against which the teaching strategies to be discussed were enacted. Relevant aspects included:

- teachers' willingness and capacity to relax and 'be themselves' in the classroom and hence not to present a remote figure to the students
- relating to students as people, including the importance of interacting with students outside class, such as through sports coaching, or just conversation in the playground
- discipline/mutual respect - there was an expectation mutually held by students and teachers that order and purpose - within agreed limits of informality - was the classroom norm
- teacher 'availabilty' and 'approachability'.

5. Teachers' professional development

The teachers in this study were often teachers whose expertise was sought out from others, often from neighbouring schools. Some had taken the lead in in-service activities in one way or another and some stated that their programs were sought after by others.

Networking

Many teachers saw networking with peers as an important basis of their professional development, such as through membership of professional associations and/or curriculum committees, or through links with relevant professions outside school - viz. artists, musicians, lawyers etc.

In-school professional development

Half of the teachers identified their professional development as most importantly based in their own Faculties - usually through formally organised staff activities such as reporting back from professional association meetings or giving demonstration lessons. Some teachers also nominated a mentor on staff, usually a Head Teacher, as an important source of their current or past development as teachers.

Development through experience

Almost all teachers attested to important professional learning coming through experience, though these effective and successful teachers did not necessarily see experience' as enough for their continued development as teachers. Indeed, some teachers who declared that they had 'picked up' a particular teaching strategy through experience may have done so much earlier given formal professional development.

Out of school professional development

There occurred an observable, almost even split between teachers who identified external professional development as important in their teaching and teachers who were explicit about rarely ever attending in-service courses. Twelve separate teachers identified aspects of formal professional development as important. Of eight teachers who currently make use of external formal courses for professional development, all eight identified courses on 'content' as valuable, while four also identified courses on teaching strategies as valuable.

Most of these courses are traditional 'in-service', usually provided by professional associations. However, some teachers sought out their own sources of professional development. One Ancient History teacher and one Modern History teacher, for example, attended University courses on, respectively, drawing and reading hieroglyphics and on teaching gifted children.

6. *Resources and Planning*

Planning

Over half of the teachers identified planning as a key aspect of their success - both in terms of content and strategies, though content planning was more common.

Resources

Teachers overwhelmingly developed their own resources as a substitute for, or adjunct to, a textbook for the subject. Textbooks alone were seen as inadequate resources - in some cases, because the subject demanded topical material, but in others, because the material in particular books was not alone sufficiently challenging or innovative.

7. *Teaching Strategies*

The ultimate aim of the research was to identify those teaching methodologies that successful teachers of successful HSC students were using. Clearly, the discussion below reveals much commonality amongst the teachers across the curriculum, but the research also revealed some key differences in subject-based methodology. These subject differences were manifested in two main ways:

- certain methodologies were more prominent in particular subject areas
- teachers in different subject areas attached different meanings to methodologies, the labels for which were nevertheless common across the curriculum - virtually all teachers, for example, believed in 'classroom interaction', but this clearly meant different things to Maths teachers from what it meant to History teachers.

Another issue of importance here is that teachers were observed using many more types of teaching strategies than they themselves were able to nominate at interview. It was rare for the teachers to describe a teaching methodology that was not observed.

a) Classroom Climate

Interesting aspects of the classroom climate in these teachers' classes included:

- unspoken expectations that behaviour would be 'on-task', yet acceptable 'off-task' behaviour was tolerated
- the rapid rate at which a significant number of lessons proceeded. Despite this, the students did not seem to be lacking in understanding, since they did not complain, questions asked did not suggest any such problems, and questions answered seemed to show that students were 'keeping up'
- in-class face-to-face time as the central learning element, rather than home study or any form of private individual research. It is as if the very interaction of the community of learners was regarded as basic for each individual learner
- teacher enthusiasm and energy
- teachers' reinforcement of students and recognition of their work and achievement
- a certain measure of repetition and routine in the management of the classroom
- teachers showing an interest in their students' lives, as well as in their progress
- the development of an ethos of co-operation, sharing and community.

b) HSC Focus

In half of observed lessons, the researchers felt that the lesson was 'HSC dominated'. This determination was made based on a number of factors. Though the HSC, in obvious ways, provides the very raison d'etre of the lessons, some of the observed lessons were more openly presented to the students as having their rationale in the HSC exam itself.

Such lessons might typically be introduced by a statement such as "Today we're going to do X because you need to know/be able to do/practice this for the exam". In these lessons, there were almost constant references made to the HSC itself, or to the relevance of the material to the HSC, during the course of the lesson.

Half of the teachers felt that regular practice on specific components of the exam was important and half of the observed lessons did contain a number of specific exam 'tips'. This was in the form of advice on examination 'strategy' and/or specific reference to the kind of 'content' students should stress when answering.

Some teachers provided the Syllabus itself to students as the key guide to class work; the ex-students of particular HSIE teachers argued that continually returning to the Syllabus had been 'very important' to their success in the HSC. Teachers, on the whole, created in their classrooms a 'culture' in which the HSC was treated as a kind of game, not in any pejorative sense, but in the sense of it being a ritual with its own set of rules that had to be met and faced.

Half of the teachers felt that their HSC marking experience was a vital ingredient in their success. This is usually stated in terms of:

- the 'networking' that HSC marking makes possible
- the 'in-service' value of marking
- the sense that is gained of what is valued and rewarded in HSC responses.

Yet, despite this HSC focus, half of the lessons were not considered to be 'dominated' by the HSC, and, indeed, in some observed lessons there was virtually no reference to the HSC in any form. This was remarkable given the ever-present nature of the exam in Year 12 classes. In fact, a number of teachers made an issue of this at interview:

> *We do things not in the course.. we often teach beyond the HSC a little to aid their understanding and for them to learn to use the information.*
>
> *I aim at understanding rather than the HSC, so I go beyond what the Syllabus asks. I don't teach to the HSC; I teach for them to understand*
>
> *Maths is more important than the HSC.*

Such statements reflect a clear sense, expressed by almost half of the teachers, of a dichotomy between 'teaching to the HSC' and 'teaching for understanding'. This was one of the clearest messages that came out of interviews. Teachers were making strong statements about not being 'exam-driven' where such an approach might prevent deeper student understanding. Against what might be expected about what makes a successful HSC teacher, these teachers were not exam 'crammers', despite the fact that, necessarily, the HSC provided the focus for their teaching. Certainly the HSC exam was a rationale for many of the lessons observed, but even these were not conducted as cramming content for the exams.

c) Building Understanding

In terms of actually aiding students' understandings of the subject matter, the researchers classified a large number of classroom strategies under the rubric of 'building understanding'. This often referred to ways in which teachers helped develop students' understanding of subject matter through a series of sequential steps. However, sequentiality was not always a necessary ingredient in helping 'build understanding' - for example, drawing together the ways in which the subject matter related to other content previously covered was a very common way of building understanding that depended on a breadth of view and a depth of knowledge rather than on a sequence of steps.

The inter-relatedness of areas of the subject

In over half of the observed lessons, drawing on the inter-relatedness of different areas of the subject was an important teaching device. Teachers did not proceed in a lock-step fashion through a series of demonstrations of new material, but rather continually tried to develop the 'big picture' of what different areas of the subject meant for each other. This seemed closely tied to the general ethos discussed above of seeing understanding as more important than knowing the routine for the 'right answer'. This kind of inter-relatedness manifested itself in obvious ways such as quick reviews of previous material to lead into the current topic or simply building on a previous topic in a sequentially logical way.

As an exemplar, one of the most interesting and useful lessons observed was a Maths lesson in which students were asked to apply a new formula they had just learnt. Instead of proceeding to a series of activities in which students would simply practise using this new knowledge, as a first step after deriving the formula, this teacher required students to apply the formula to a series of particularly complex two-or-three-stage problems. These problems were initially completed as a whole class. In each case, at some point in the solution, material that they had learnt in the past needed to be applied. Moreover, as the solutions were occurring, the teacher would continually complicate the issue by asking, 'But what if it had said ... ?' - the answers to which also depended on the application of some past knowledge.

In a later episode of the lesson, students were given a particularly difficult three-step problem to solve alone or in groups. The declared aim of this problem was to deliberately search out variety - the teacher wished to see students finding a number of ways of solving the problem, with a prize going to the most 'elegant' solution. The teacher moved among the students as they worked on the problem, became satisfied that four students had four different solutions and had these students demonstrate their solutions on the blackboard. The point of this was, again, to display the variety of possibilities, since each solution was correct. Each solution drew on knowledge outside this immediate topic and, moreover, as each solution was demonstrated, the teacher would complicate it even further by asking, 'Now at this stage, what if the question had said ... ?'. In each case, the other hypothetical possibility also drew on past topics.

Using students' responses

A noteworthy number of teachers across the curriculum had their observed lessons proceed by using student responses as the building blocks towards new knowledge. Typically, this would take the form of building up a set of blackboard notes from student responses or leading students through a series of questions towards some moment of insight. In one English lesson in which this was a strong feature, a number of students were sent to the front of the class after completing some group discussion and asked a series of questions about a poem being studied, each of which was based on the logical consequence of their previous answer: 'If X is important, what does that mean for Y?'. This episode was marked by the teacher encouraging, prompting ('Keep going ... '; 'What does that mean about ... ?'), even demanding, as students were led to a point which the teacher perceived as an end-moment of insight into the poem.

Facilitating thinking through applying knowledge and solving problems

The most common interview response entered in the general category of 'Building understanding' was the response which emphasised the importance of having students apply knowledge, often through solving problems. This element was usually contrasted with copying notes and with being told the answers too readily. It was also linked closely to maximising the use of in-class time and to the inter-relatedness of areas of the subject.

The stress on applying knowledge was also commonly observed. It was common for Maths teachers on one particular staff to have the students derive formulae for themselves using inductive reasoning. Reasoning and independent thinking were stressed by teachers across the curriculum during interviews.

Interpretation

Related to the idea of application, problem-solving and thinking was the emphasis on interpretation, rather than simple reproduction, of knowledge. In an Ancient History lesson, students were supplied with pictures of the Palace of Knossos and asked to deduce the purpose of the palace before any information was supplied. In another, students were issued with a list of 'Sayings of Greek Women' and asked to deduce the values inherent in the society that produced such a list.

DARTS

In 1984, Lunzer and Gardner coined the acronym 'DARTS' (Directed Activities Related to Texts) to refer to a set of activities designed to have students engage with the meanings of whole texts. The point of these activities (also known as 'new model comprehension') was to move away from traditional (old model) comprehension work in which students were asked to complete a series of usually over-literal or irrelevant questions about passages taken out of context. These DARTS were designed to have students actively engage with whole texts with the emphasis on meaning and meaning-construction.

DARTS include activities such as:

- cloze (filling in missing sections of text)
- prediction (using prior knowledge to predict up-coming sections of text)
- having students ask the questions of texts instead of the teacher (What is it you need to know to make sense of this?) categorising and labelling (supplying headings for sections of texts, or nominating the theme of a section)
- sequencing (taking jumbled texts and, through discussion and close reading, restoring their original order).

A number of teachers in the study were observed using DARTS in some form. One of the teacher-made resource books in Ancient History included a number of cloze exercises. In another Ancient History lesson, students were to categorise pieces of evidence by matching sets of pictures to their likely locations in a palace. In a Legal Studies lesson, students were asked to 'Look for and underline all the bits that refer to X' - a typical DARTS 'labelling' activity. One Maths teacher said that she often used sequencing activities, while another described commonly having students set problems for others to solve by applying some new learned formula.

Games, simulations and stories

Three teachers were observed using small-scale simulations or games in their lessons - students taking on various roles in a crime scenario in Legal Studies; a student taking on the role and values of the poet Donne in English and a 'Trivial Pursuit' quiz in Ancient History. One Ancient History teacher said that she had students remember key names and concepts (and their spellings) by using them in songs. Ex-students reported of their Business Studies teacher that one memorable unit had been when the class actually set up a business and made money. This necessitated a lot of groupwork and a lot of research into companies. Students reported that the class became a genuine team, sharing resources together. This Business Studies teacher was also clearly a great story-teller. An ex-student said of him:

> *Yes, you knew that whenever he began a sentence with , 'I've got a mate who ...', that you should listen and write it down because it would be a useful example. We always remembered these examples because of their relevance.*

d) Note-making

If one were to draw a distinction between what might be termed 'note-taking' (the teacher writing up, dictating or otherwise producing notes for the students to directly copy) and 'note-making' (the production of notes by the student through means other than copying the teacher's), the latter was by far the most dominant mode in this study.

Building notes

It was not unusual for teachers to build, or to help students build, a set of notes. Strategies used by these teachers included:

- building a detailed set of notes from combining previously-made student notes, usually on the blackboard
- recording the main points of student discussion
- directing the note-making of students and facilitating the development of student summaries ('Read X and underline or highlight all evidence about Y to develop your own set of notes').

Most teachers also reported at interview using strategies such as:

- developing blackboard summaries from student contributions
- having students build notes from research based on a question they are set having students make notes based on class discussion
- having students make notes under their guidance
- having students make notes based on student presentations
- filling in any gaps in student-made notes through class discussion.

Most of these elements were perceived as ways of assisting independent note-making.

Independent note-making

While a few teachers were observed quickly distributing typewritten notes for students to read later or from which students were to extract information to solve a problem, nevertheless, little class time was spent with students 'taking notes'. In fact, the distribution of notes by teachers was always seen by them as a way of supplying necessary information quickly in order to move to having students do something with the information.

Teachers, moreover, displayed a variety of ways of encouraging independent note-making by students. The key theme here was 'student independence' - either in the decision about what notes to make and/or in the methods used to make them. This was one of the key findings of the research. Teachers continually found ways of encouraging students to make their notes 'their own'. This tied directly to the general theme discussed above of wanting students to think independently about the issues/problems and not wanting to 'spoon-feed' information:

> *I hand out notes to cover formulae, examples etc, but class time is to be spent in applying the knowledge. I'm not a great note-giver because I'm more concerned that they understand, which doesn't necessarily happen when they're copying notes.*

A number of methods for encouraging such independent note making were observed. These included:

- making a brief beginning to a set of notes, such as through dictation, and telling students to complete the notes themselves through research or based on the discussion that was about to ensue
- directed note-making as discussed in the previous sub-section ('Building notes'). Here, the teacher indicated areas to which students should attend ('Read... underline and make notes on any aspect of the document that suggests why Russia would have trouble sustaining a war'). This was an especially prevalent strategy in History lessons
- allowing time for systematic student note-sharing, such as by breaking a topic into sub-themes and having groups become 'experts' on each sub-theme, followed by sharing of their findings. Student seminar presentations also fell into this area. Generally, teachers would follow this up by having examples of student presentations or assessed tasks or group work copied for the whole class
- allowing a fair degree of latitude for students to decide what notes to record. This was quite common across the Humanities and HSIE areas. A Legal Studies class, for example, were told, 'Of the definitions we've just produced, only copy down those you don't already know. If you know the definition already, don't bother'. At one point in this same lesson, the teacher used an overhead transparency with a series of summary notes on it, but began with it covered up. The teacher then asked a series of questions, and when he had the answer he wanted, he would reveal part of the transparency containing that answer. But he insisted that students only copy what they needed and to leave room for further filling-in during the discussion if something came up that they thought was important. He then gave the students time to make such notes

- having the students review 'in their own words' what was covered in class

- students making their own notes which the teacher later checks and fills in OR selected students read their individual notes back during the lesson and teachers cover any neglected areas.

This combination of independence with guidance led to students developing a set of notes that were 'owned' (and thus easily comprehensible) by them, and also obviated the need for later exam summaries to be made.

e) Writing Essays and Organising Information

At interview, teachers spoke about the kinds of emphases they placed on essay writing as exam preparation.

The Modern History teacher, who had marked the HSC at both 2Unit and 3Unit levels for 10 years, said that she eschewed use of the 'big practice essay', seeing it as worthless in terms of exam preparation. She did, however, spend quite a lot of time on writing essays in the time-scale allowed by the exam itself. Ex-students of the Legal Studies teacher stressed the importance they saw in their work on essay technique, highlighting the importance that had been placed on particular plans and structures for essays. These same students also felt that an important part of learning to write successful essays was the teacher's provision of positive essay examples from past students. This provision of positive models was an important theme in a number of student interviews in a number of subject areas.

Answering problems

Half of the teachers pointed to the importance of 'stretching' or 'challenging' students, and especially to having high expectations and carrying these through. Teachers in this study tended to stress that students should not be 'taught down to' or even 'led by the hand' to too great a degree. This attitude was spread across both selective and comprehensive schools and was in both lower and upper socio-economic groups. Teachers who refused to supply ready-made answers to students outnumbered those who did in observed lessons. Problems were given and challenges presented in a variety of ways . For example, 2/3 Unit Maths teachers were observed:

- encouraging students to seek a variety of solutions to a problem

- complicating solutions by reversing the elements of a question ('What if it had said....?')

- spending time having students face the particularly difficult aspects of a problem using practical problems from which students discovered concepts having students induce formulae from specific examples beginning with difficult problems rather than simple ones to work on a new concept.

f) Questioning

Whole-class questioning, not unexpectedly, was one of the most frequently used teaching devices observed. Douglas Barnes' (1974) study of teacher questioning in schools argued that 'open' questions (those to which there were a number of possible answers) were more likely to promote discussion and maximise student involvement and learning than were 'closed' questions (to which there was only one answer). Barnes further found that closed questions predominated in schools and that teachers were forcing their students into playing a game of 'guess what's in the teacher's head'.

This research confirmed Barnes' findings about the predominance of closed questions. Across the curriculum, lessons were dominated by closed questions of a 'give-back-to-me-the-information-I-want' type. This might seem a contradiction of the description given above of teachers emphasising reasoning, understanding, thinking and interpretation - were it not for the fact that these latter elements were so often observed.

The clue to solving this seeming contradiction was that teachers displayed different behaviour according to whether students were working alone (or in groups) or whether they (the teachers) were teaching to the whole class. The former was dominated by a thinking, interpretative, problem-solving, application set of approaches, while the latter was dominated by 'guess what's in the teacher's head' during question-answer sessions. Whole-class question-and-answer sessions, then, seemed to be seen by these teachers as more suitable for assessment and for linking different aspects of a topic, especially with past material.

Questioning, then, is used as step-by-step building. It is not used by teachers for applying and interpreting in the same way as are activities which students complete independently - either alone or in groups. In the question-and-answer sessions, the teachers were making links to previous knowledge and assessing what students knew. Students' own interpretations were encouraged in group work episodes.

g) Whole-class Discussion, Group Work and Independent Student Activity

Discussion

In observed whole-class discussion (as opposed to whole-class question-and-answer sessions), there was open debate, the presentation of opposing views and respect for all opinions in the class. Discussion did tend to be filtered through the teacher.

Group work

Small group work in HSC classes occurred in a third of observed lessons. In these lessons, group work was largely confined to the Humanities and English, but, in interviews, two-thirds of the teachers spoke of using group work as a way of reaching understanding of the material - and this represented a range of KLAs. Different reasons were given for this widespread use of group activities. These included:

- allowing opportunities for simply using the English language (in a Contemporary English class)
- wanting students to make deductions from source material, 'which is preferable to the teacher telling them'
- wanting students to learn from what they each bring to the subject matter (including in mixed ability situations, such as where a number of different Ancient History courses were represented in the same class, or in a course with only one class, such as Biology)
- wanting students to find for themselves the key problems to be solved wanting students to solve problems, such as by using 'hands-on' concrete materials or by finding alternative solutions, as in Maths.

One crucial aspect of work completed in groups - or individually by students - was the behaviour of teachers while students were working independently. In almost every lesson observed, when students were working alone or on groups, teachers spent their time moving among students providing one-on-one assistance. This in itself is not remarkable, but of interest is the forms which this monitoring took - which tended generally (and paradoxically) to emphasise student independence. Two Ancient History teachers did tend to provide direct answers to student questions on the material they were working on in groups, but other teachers refused.

In a Biology lesson, while the teacher moved among students to clear up problems, she refused to supply answers to the task-questions. One Maths teacher would explain concepts and ask questions of the students, but avoided supplying answers to problems. A Modern History teacher would prompt students and ask further questions, but supplied no answers, while an English teacher gave students answers to questions about the form of a poem, but assiduously avoided providing any answers on themes or issues in the poem being studied.

Independent student activity

Apart from individual or group work, other forms of independent student activity which teachers said they used reasonably often included:

- presentation of seminar papers by students
- peer teaching
- individual outside-class research activity.

h) Assessment

In lessons observed, the most notable set-task assessment item was the use of short tests and quizzes on subject knowledge. The particularly interesting thing about this was the instantaneous nature of teacher feedback in each case. In an English lesson, students were asked to answer questions on a poem and the answers were read and discussed during the lesson. The same pattern occurred in a Biology lesson. Perhaps most interesting in this respect was an Ancient History lesson which began with a quiz, which the students had returned to them by the end of the lesson with a teacher commentary on how they'd achieved generally. This had been marked while the students had been working in groups, even though the teacher had still had time to move among the groups for individual assistance.

In interviews, teachers provided a range of perspectives on assessment. The most common strategy mentioned was the use of a full lesson to evaluate or follow up the assessment of previous work. This took a number of forms. One Business Studies teacher provided a print-out for the class after every assessed task about what they'd done that needed improvement. A lesson was spent discussing this. Providing a lot of feedback was generally seen as important, as was making this feedback as immediate as possible - all in the ontext of checking each students' progress.

i) Other Strategies

Other strategies which were observed or reported with some frequency were:

- communicating the aims of the lesson to the students
- a lesson pattern of question/answer/ explain
- a lesson pattern of demonstration/ application
- a portion of the lesson delivered as a lecture
- using concrete aids to recall. These included:
  - mind-maps
  - time-lines
  - concrete materials such as colours, food
  - graphs
  - singing
- having students use their imagination such as through having them:
  - mentally visualise a scene
  - draw parallels with their own time
  - imagine they are in another setting
  - play a role
- using students at the blackboard or in some way as a demonstration/model
- taking students to lectures or other resource- settings outside school encouraging students to take part in extra-curricular activities, such as Mock Trials for Legal Studies
- using real-world examples in explanations.

CONCLUDING COMMENTS

An important element in assessing teaching methodology in the HSC is to determine the degree to which the classroom activity is dominated by the HSC exam itself. In a very obvious sense, the curriculum is entirely determined by the subject content laid down for the HSC. But given that constraint, the study was partly interested in observing the extent to which classrooms as a result of this content-focus then became 'exam factories' dominated by simply practising exam routines and exam answers, or whether teaching practices were still as concerned with having the students engage the material with interest and understanding as one might expect in the teaching of, say, Years 7-10. Did the nature of the curriculum and its assessment drive a particular set of teaching methods in the classroom?

The research was partly interested to discover whether 'teaching and learning' gave way to 'examing and cramming'. In the event, what was observed were teaching practices that attempted to continue the kind of engagement and understanding one would expect from enlightened educational practice. Only three observed lessons were entirely devoted to specific practice of components of the exam - and in two cases, these were listening tests, the format of which the teachers believed necessary for more intensive student rehearsal (the third was a post-Trial-exam de-briefing). Certainly the HSC exam was a rationale for many of the lessons observed, but these were not conducted as cramming content for the exams. Exam 'pointers' were commonly relayed by teachers and there was a general culture that though the HSC was their dominating constraint/raison d'etre, nevertheless, it was not going to get in the way of trying to generate interest and genuine understanding about the subject.

While teachers used a wide range of teaching strategies to build student understanding, a key common factor was an emphasis on having students think, solve problems and apply knowledge. Simply reporting back knowledge or practising formulae outside of the context of application was unusual. Teachers strongly saw their role in the classroom as challenging students, rather than 'spoon-feeding' information. They demonstrated ways of building notes and assisted in this process, but were never observed dictating a complete set of notes or having students simply copy notes without a context developed or a lead-up involving student responses. Instead, teachers demonstrated and discussed a variety of ways of helping students to become independent note-makers.

While questioning in the whole-class situation was dominated by closed questions, this contrasted to the strategies teachers used when having students work alone or in groups. In fact, group work was more prominent than might have been expected in HSC classes and was used for a variety of reasons, particularly activities oriented towards problem-solving. The closed questions that teachers used in the whole-class situation tended to be used to carefully build understanding of the material in layers and to make links to other aspects of the content. In effect, it served to both look back and look forward in the subject.

The teachers themselves were clearly genuinely expert in their subject area, felt that subject expertise was extremely important and enjoyed their teaching of, and association with, their subject and their students.

It is important to stress the point that successful teaching in the HSC environment is not a matter of a simple 'recipe' (though certainly many aspects of the strategies observed and discussed are 'teachable' and 'transferable'). The teachers identified here operated in particular contexts and had particular qualities that are not part of any simple recipes that can simply be 'picked up'. Relationships with students were a crucial aspect of their functioning, the teachers nominating good rapport with students generally as an important aspect of HSC success. Teachers alluded to, and practised, a policy of mutual respect in their classrooms and this obviated any necessity for overt disciplinary measures. The classrooms observed for this research were relaxed, pleasant environments, but highly focused. There was little or no 'dead time' in class and class time was regarded as sacred.

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